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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/016,475
Filing Date: November 30, 2001
Appellant(s): PROKSCH ET AL.

Scott C. Harris
For Appellant

EXAMINER'S ANSWER (Supplemental)

This is in response to the appeal brief filed December 31, 2007.

(1) *Real Party In Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

None

(3) *Status of Claims*

The statement of the status of the claims contained in the brief is correct.

(4) *Status of Amendment After Final*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) *Summary of Claimed Subject Matter*

The summary of Claimed Subject Matter contained in the brief is correct.

(6) *Ground of Rejection to be Reviewed on Appeal*

The appellant's statement of the ground of rejection to be reviewed on appeal in the brief is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the appendix to the brief is correct.

(8) Evidence Relied Upon

| | | |
|------------------|-------------------------|----------------|
| 2,452,862 | NEFF | 10-1945 |
| 2,364,237 | NEFF | 11-1943 |
| 2,503,851 | SNOW | 06-1944 |
| 4,030,085 | ELLIS et al. | 06-1977 |
| 4,667,158 | REDLICH | 05-1987 |
| 5,381,089 | DICKMEYER et al. | 01-1995 |
| 5,432,444 | YASOHAMA et al. | 07-1995 |
| 6,043,573 | NEFF et al. | 03-2000 |

**Sydenham et al., "Low-cost, precision, flat inductive sensor",
Measurement, 15(3) pp. 179-188, June 1995.**

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

DETAILED ACTION

Claims 1-3,62-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neff (2,452,862) in view of applicants admitted prior art (AAPA) & common knowledge in the art.

As to claims 1, 64-65,67-69, Neff discloses a displacement apparatus including a first and second non-magnetic coil forms (2,6 in figs. 1-5) with a common axis, each wound with at least one winding (3,4,5); the outside diameter of the first form with its winding or windings being smaller than the inside diameter of the second form (Note e.g. Fig. 2) so that each may be displaced relative to the other with the first form inside the second form; the winding on the movable form magnetically coupled to the winding on the stationary form and a circuit generating a signal responsive to relative displacement between the coil forms. Furthermore, Neff discloses that the pickup mechanism is capable of accurate measurement in the order of tenths of thousandths of an inch. Applicant agrees that $10,000^{\text{th}}$ of an inch is about 2.5 microns. Thus, it represents displacement in the range of microns or less. AAPA discloses RMS noise representing less than 2.1 nm in fig. 10. Neff is silent that the forms are non-ferromagnetic. However, it is inherent that these forms are non-ferromagnetic. The non-ferromagnetic forms don't interact with the magnetic field generated by coils. It is also very common in the magnetic field art to have a coil form made

from non-ferromagnetic material e.g. plastic or ceramic bobbin. The non-ferromagnetic coil bobbins or coil forms are also use in inductive sensing art to isolate or insulate coil winding from the rest of the elements of the device.

Applicant also admits that non-ferromagnetic forms are known in the art (page 5, lines 16, Ellis et al., 4,030,085, refs 21,24 in fig. 1; page 5, line 19, Snow, 2,503,851, refs. 61,66, fig. 11). Consequently, it would have been obvious to one having ordinary skill in the art to modify the pick-up device of Neff to use non-ferromagnetic coil forms since they are very well known in the art as explained above for their use.

Neff does not explicitly disclose a means for reducing noise. Applicants admitted prior art teaches to remove Barkhausen noise from the output signal by various means (Note pages 5-6). One simple means to reduce such noise is to use air core or non-ferromagnetic coil forms. Consequently, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Neff to have included such means to reduce the noise from the output signal as taught by applicants admitted prior art to enhance the sensitivity of the device.

As to claim 2, Neff discloses two coils on inside coil form and one coil for outside coil form (Fig. 4).

As to claim 3, Neff discloses two coils on outside coil form and one for inside coil form (Fig. 1 or 2).

As to claims 62, 66, Neff discloses coils forms 2,6 and non-ferromagnetic coils forms would reduce Barkhausen noise as explained in detail above.

As to claim 63, Neff teaches in fig. 2 that an air core 8 may be substituted for the iron core 1 of fig. 1. The transducer with an air core i.e. non-ferromagnetic core would generate a signal having 1.9 nm RMS noise (last line of second para on page 13 of the specification, also note fig. 10).

As to claim 69, the method claim 69 recited for using the apparatus in claims 64-66 are an inherent use of the apparatus of Neff & AAPA and are rejected on the same grounds. One of ordinary skill would find it inherent that the apparatus of Neff modified with AAPA and common knowledge in the art operates in the functional manner claimed by applicant.

(10) *Response to Argument*

Applicant's arguments filed on July 6, 2006 have been fully considered but they are not persuasive.

A. Applicant argues that Neff or AAPA or other recited references do not teach the non-ferromagnetic coil forms. Neff does not explicitly disclose

that the coils form 2 in figure 1 being non-ferromagnetic. The coil forms in Neff must be non-ferromagnetic coil forms since this is what known in the art and is commonplace in the art. The coil forms are normally plastic, resin or ceramic bobbins. There are numerous benefits of using non-ferromagnetic coil bobbins or coil-forms. The use of non-ferromagnetic coil bobbins provides better support to or mounting of coils, mechanical strength, and protection to coils, economy, durability and enhanced sensitivity. The references as cited in the specification clearly show non-ferromagnetic coil forms. Note US 4,030,085 in which Neff was cited. Coil forms 21 and 24 in fig. 1 are non-ferromagnetic; Snow, US 2,503,851, coils forms 61 and 66 in fig. 11 are non-ferromagnetic; Plastic bobbin 16 in fig. 4 of Yashohama et al. US 5,432,444; Bobbin 20 in fig. 4 of Dickmeyer et al. US 5,381,089; Bobbin 1 in fig. 2a of Redlich, US 4,667,158; Bobbin 22 in fig. 3 of Neff et al. US 6,043,573. The latest filed (filed on 04/10/2007) reference by the applicant, Sydenham et al. also discloses non-ferromagnetic i.e. Insulating forms in figure. 1. In response to "no such reference has been provided", it is noted that examiner has provided numerous references that teaches plastic bobbins. Examiner has clearly indicated in the previous office action as well as in Advisory Action that these references clearly teach plastic or non-ferromagnetic coil forms or bobbins. Examiner has directed applicant attention to note such references on PTO-892 that recites plastic bobbin.

Furthermore, applicant agreed with this conclusion in the previous filed appeal brief (March 15, 2004). Applicant never argued about non-ferromagnetic coil forms. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning or speculations, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

B. In response to appellant's argument that:

"Air core is not a form"

Examiner has never pointed out that air core is a coil form. In fact, the air core and coil form are two different elements.

C. With respect o appellant's argument that

“Neff does not teach “the electronic circuitry generates a signal responsive to relative displacements between the core forms in the range of microns or less.”

This argument is not persuasive because Neff discloses at Col. 2, lines 23-29 that the electronics circuits including a vacuum tube oscillator and electronic voltmeter circuit are the same as shown in US Patent 2,364,237, this US patent was issued to Neff too. Thus, US Patent 2,364,237 was incorporated in US patent 2,452,862. Neff in US 2,364,237 clearly discloses at Col. 2, lines 13-15 that “The pickup mechanism is capable of accurate measurement in the order of tenths of thousandths of an inch”. One of ordinary skill in the art knows that ten thousandths of an inch is microns. For example, 10,000th of an inch is about 2.5 microns. The examiner pointed out in the previous office action that Neff discloses the limitation as stated above.

D. In response to appellant’s argument that:

“signal having an RMS noise representing less than 2.1 nm of movement between the coils”

This argument is not persuasive because applicants admitted prior art discloses 2.1 nm RMS noise for ferrous core (Neff shows ferrous core 7 in e.g. fig. 1) and 0.19 nm RMS noise for air core (note fig. 10, page 13, second paragraph of the specification).

E. In response to appellant's argument that:

"Admitted prior art does not describe removing Barkhausen noise"

This argument is not persuasive because applicant admits that applicants admitted prior art teaches how to remove noise from the output signals. However, applicant argues that it does not teach as to how to remove it. If noise is removed by merely using the non-ferromagnetic coil forms, then the rejection clearly states that the use of non-ferromagnetic coil forms are common in the art. Barkhausen noise can also be removed by using an air core. Neff teaches to use such air core (col. 1, line 51). Applicant's arguments are broader than the scope of the claims. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e. the details of noise removing means) are not recited in the

rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

11. Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Application/Control Number: 10/016,475
Art Unit: 2862

Page 12

Respectfully submitted,

/Jay M. Patidar/
Primary Examiner
Art Unit 2862
April 16, 2008

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